

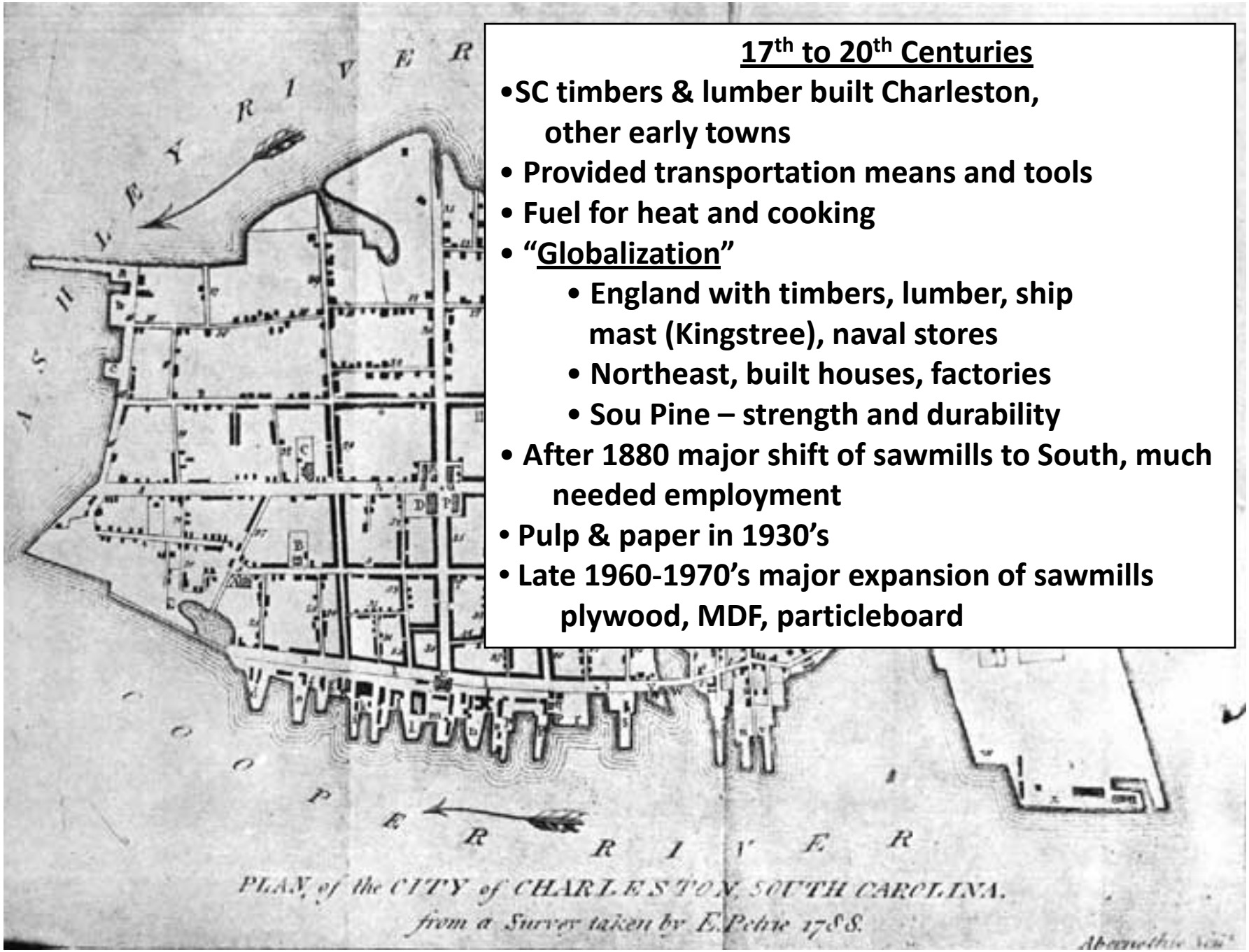
Forest and Forest Products Favorably Impact Climate Change More than Any Other Biological Function, Manufacturing Process or End Use Product

(a little known fact!)





H M Lupold, Lupold Consulting, Inc. SCPSC, Columbia, SC March 31, 2010



17th to 20th Centuries

- SC timbers & lumber built Charleston, other early towns
- Provided transportation means and tools
- Fuel for heat and cooking
- "Globalization"
  - England with timbers, lumber, ship mast (Kingstree), naval stores
  - Northeast, built houses, factories
  - Sou Pine – strength and durability
- After 1880 major shift of sawmills to South, much needed employment
- Pulp & paper in 1930's
- Late 1960-1970's major expansion of sawmills plywood, MDF, particleboard

Trade Association Promotion

Forest & Landowner

Managers, Services

Forest Users, Hunters

Buyers & Loggers

Hardwoods & Softwoods

Primary: Solid Wood Pulp & Paper Energy

Imports / Exports

Secondary Mills: Solid Wood Paper

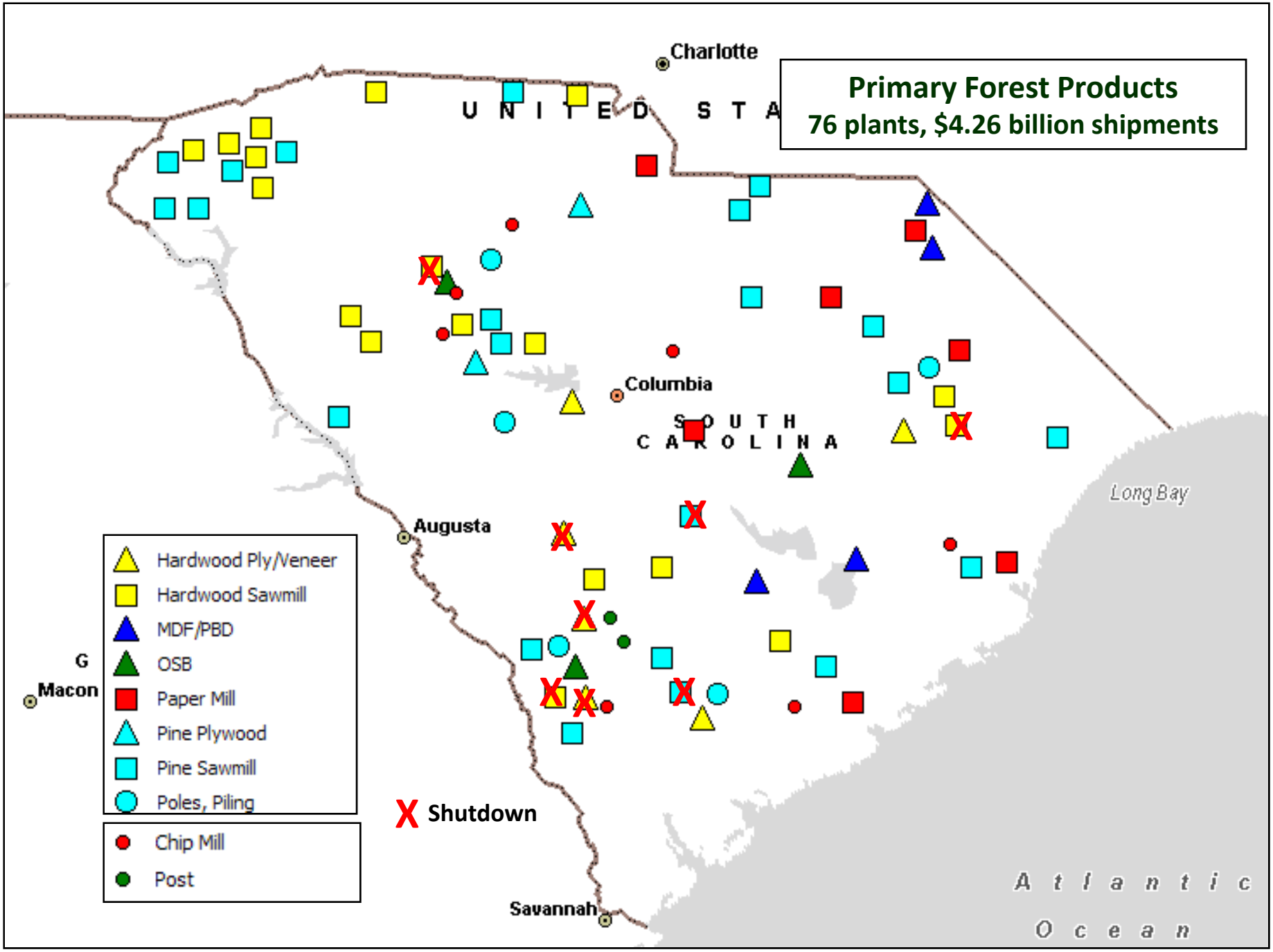
Company Marketing & Sales

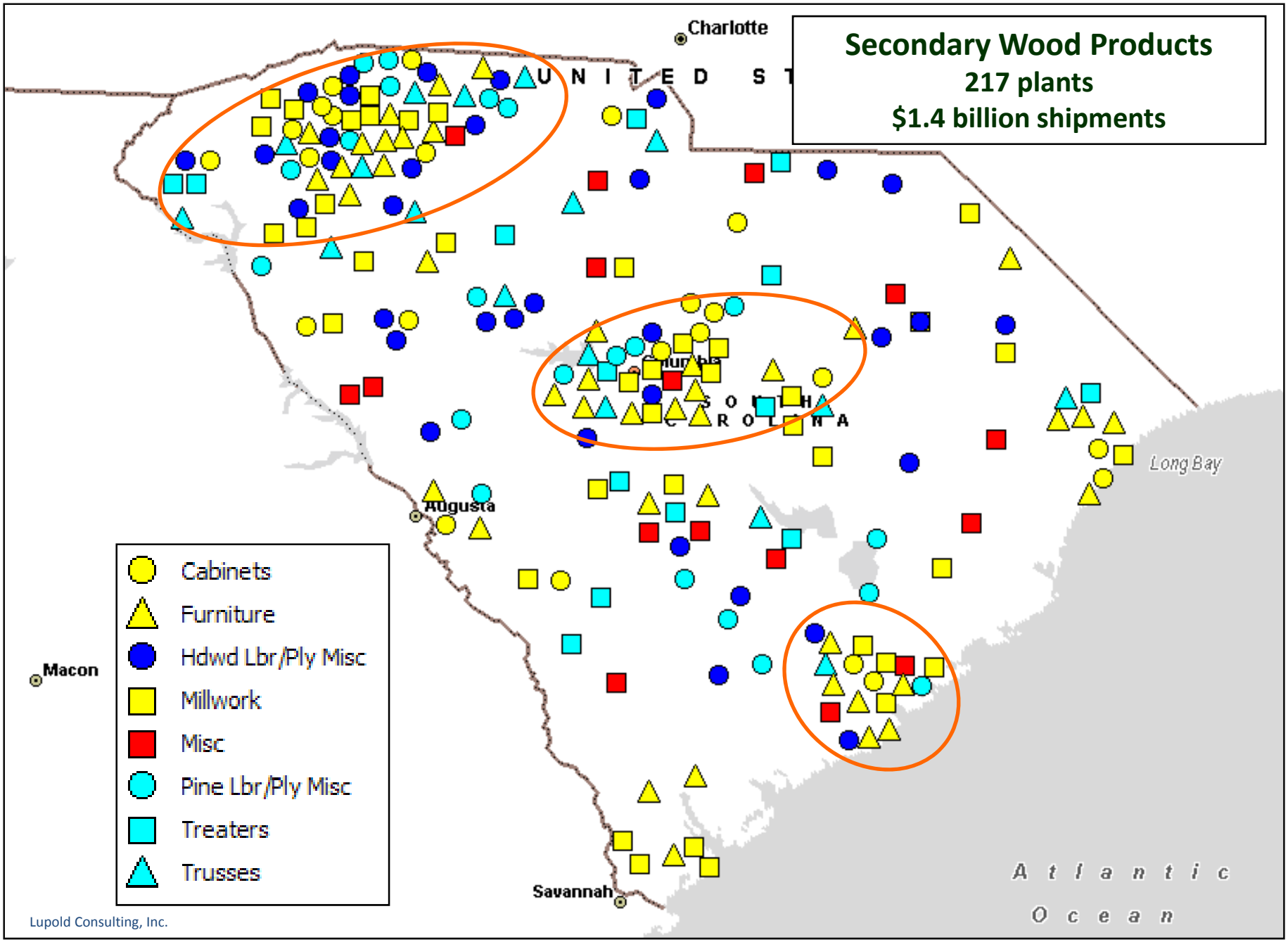
Distribution

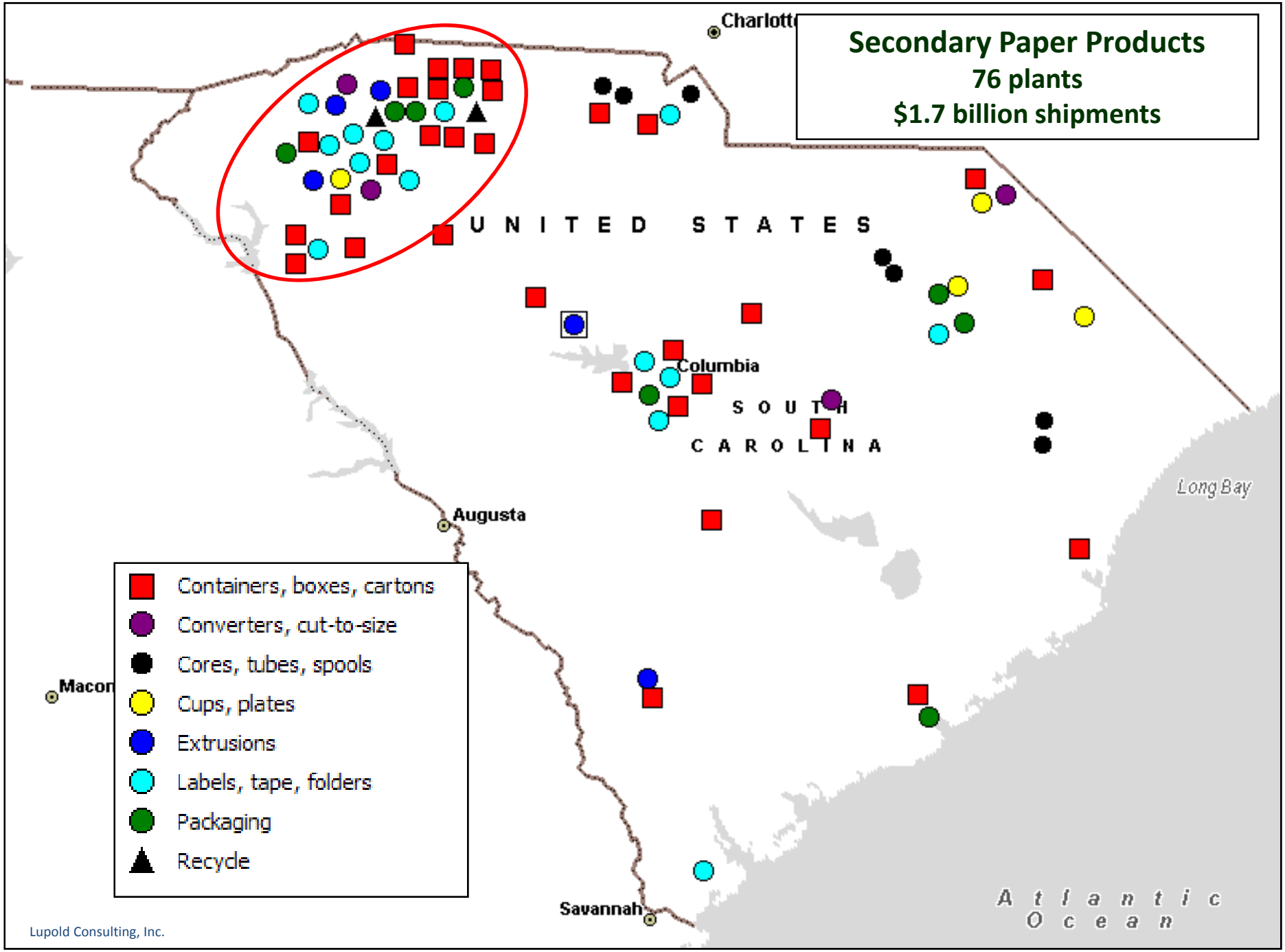
New Products R&D

Designers, Builders, Fabricators

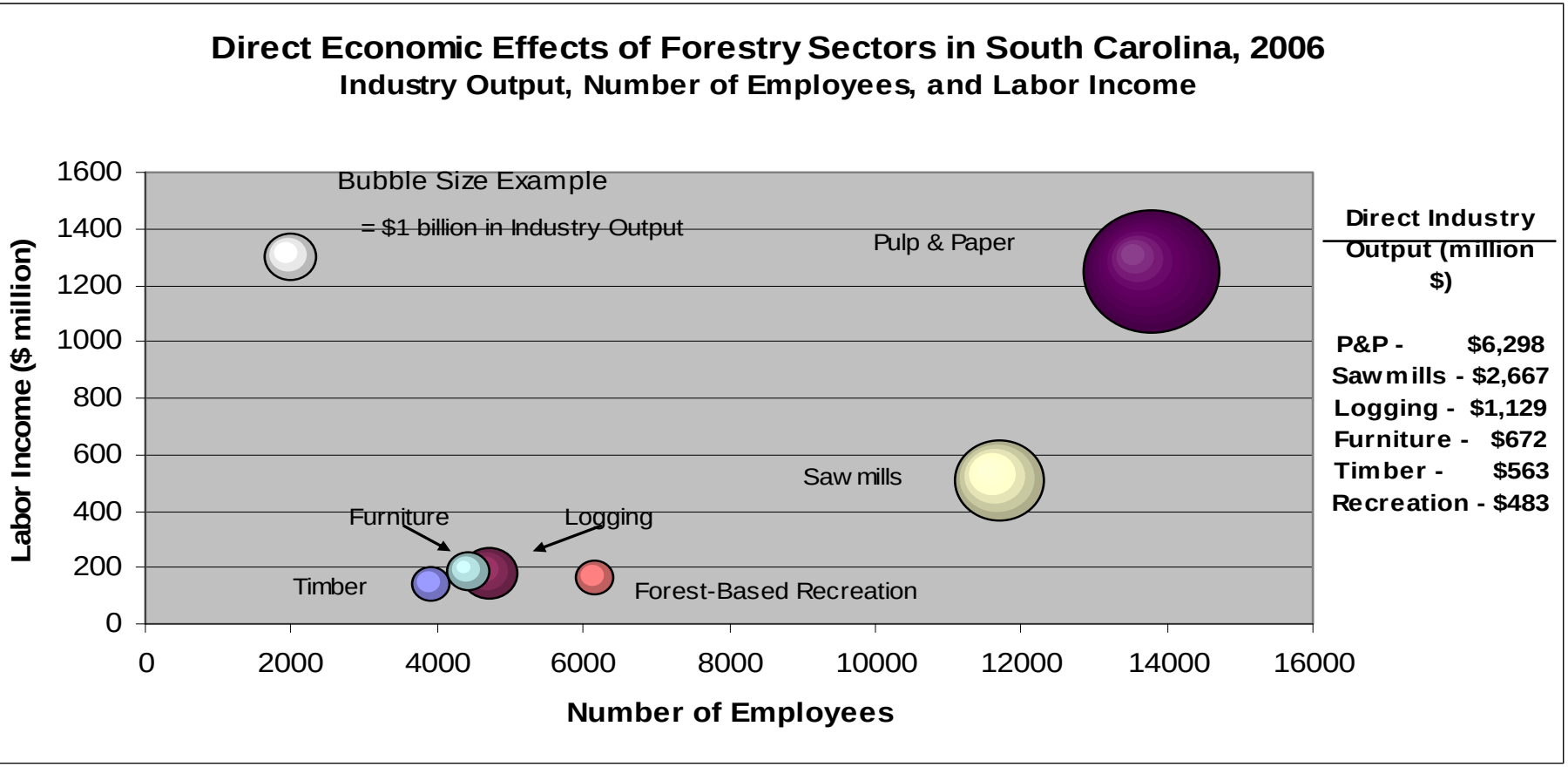
Consumers, Green Movement


Primary Forest Products
76 plants, $4.26 billion shipments
Charlotte
U N I T E D S T A
Columbia
S O U T H
C A R O L I N A
Augusta
Macon
Savannah
Long Bay
A t l a n t i c
O c e a n
Hardwood Ply/Veneer
Hardwood Sawmill
MDF/PBD
OSB
Paper Mill
Pine Plywood
Pine Sawmill
Poles, Piling
Chip Mill
Post
X Shutdown


Secondary Wood Products
217 plants
$1.4 billion shipments
Charlotte
Augusta
Macon
Savannah
Long Bay
Atlantic Ocean
Cabinets
Furniture
Hdwd Lbr/Ply Misc
Millwork
Misc
Pine Lbr/Ply Misc
Treaters
Trusses
Lupold Consulting, Inc.



Lupold Consulting, Inc.



Forestry/Forest Products 2006 Implan Results (SCFC)

Employment (direct & indirect)	**90,624**	**#1 SC Industry sector**
Labor Income	**$4,069 million**	**#1 SC Industry sector**
Value Added	**$6,963 million**	**#2 behind Chemicals**
Total Industry Output	**$17,457 million**	**#3 behind Chemicals & Transportation equipment**

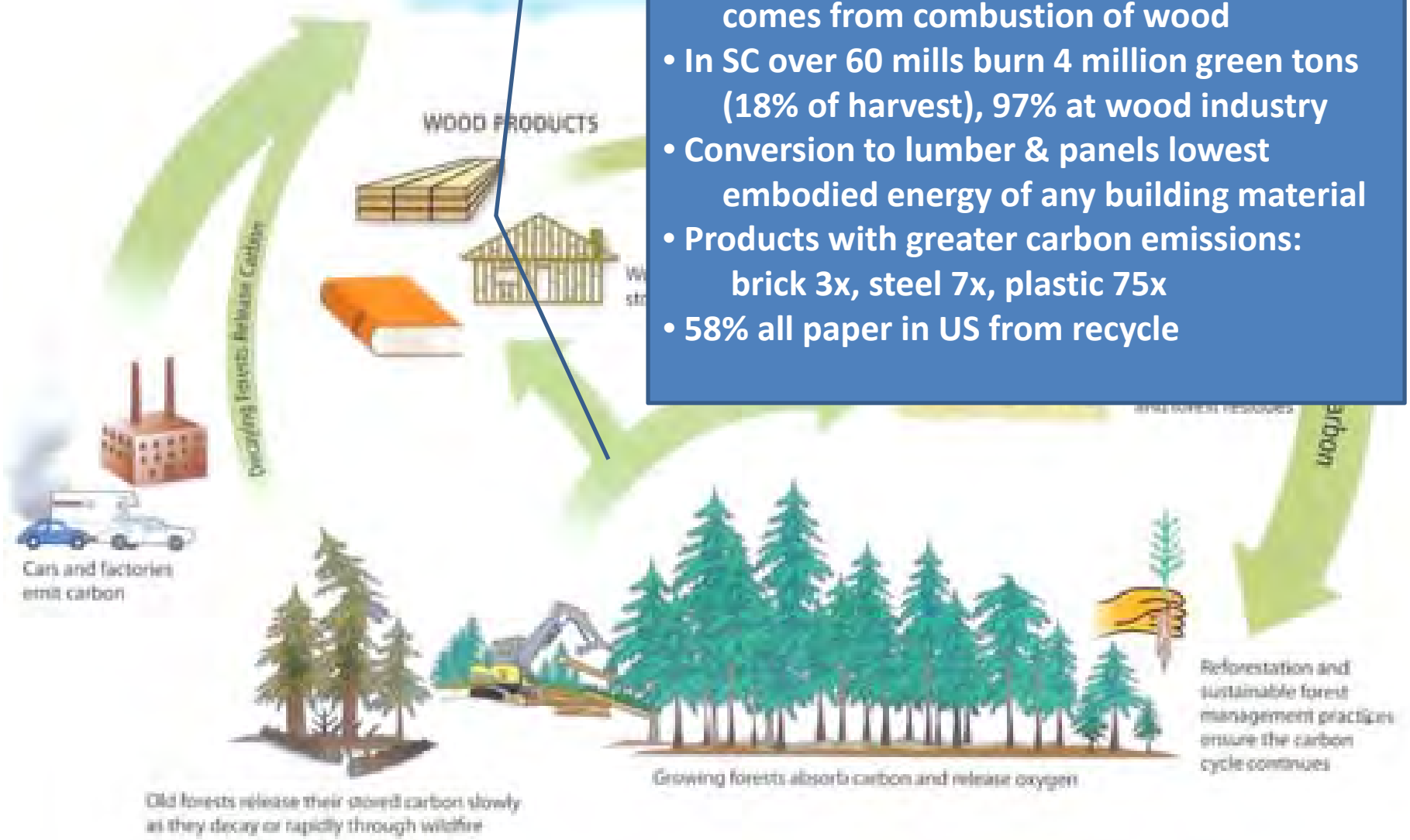
Sustainable Forestry Carbon Cycle

Sustainable Forestry Carbon Cycle

FOREST

- 63% SC land base in Forest
- 88% of forest Privately owned
- Trees 50% carbon
- Forest offset 10% of fossil fuel combustion
- SC highest annual softwood growth rate in South – even after Hugo
- Harvesting low embodied energy
- Increased sustainable harvesting could sequester 150% more carbon

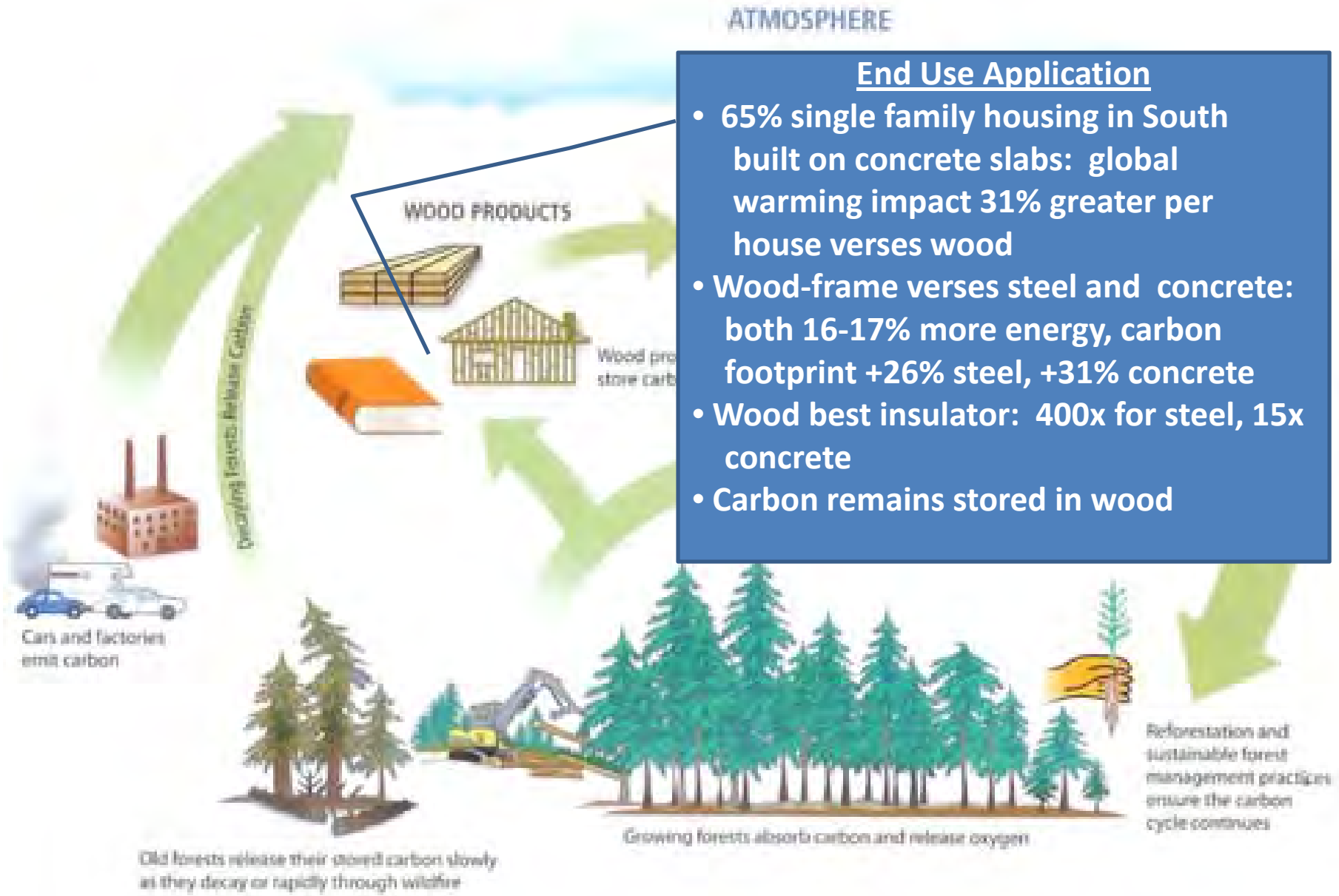
Sustainable Forestry Carbon Cycle



MANUFACTURING

- In US 65% energy at forest industry facilities comes from combustion of wood
- In SC over 60 mills burn 4 million green tons (18% of harvest), 97% at wood industry
- Conversion to lumber & panels lowest embodied energy of any building material
- Products with greater carbon emissions: brick 3x, steel 7x, plastic 75x
- 58% all paper in US from recycle

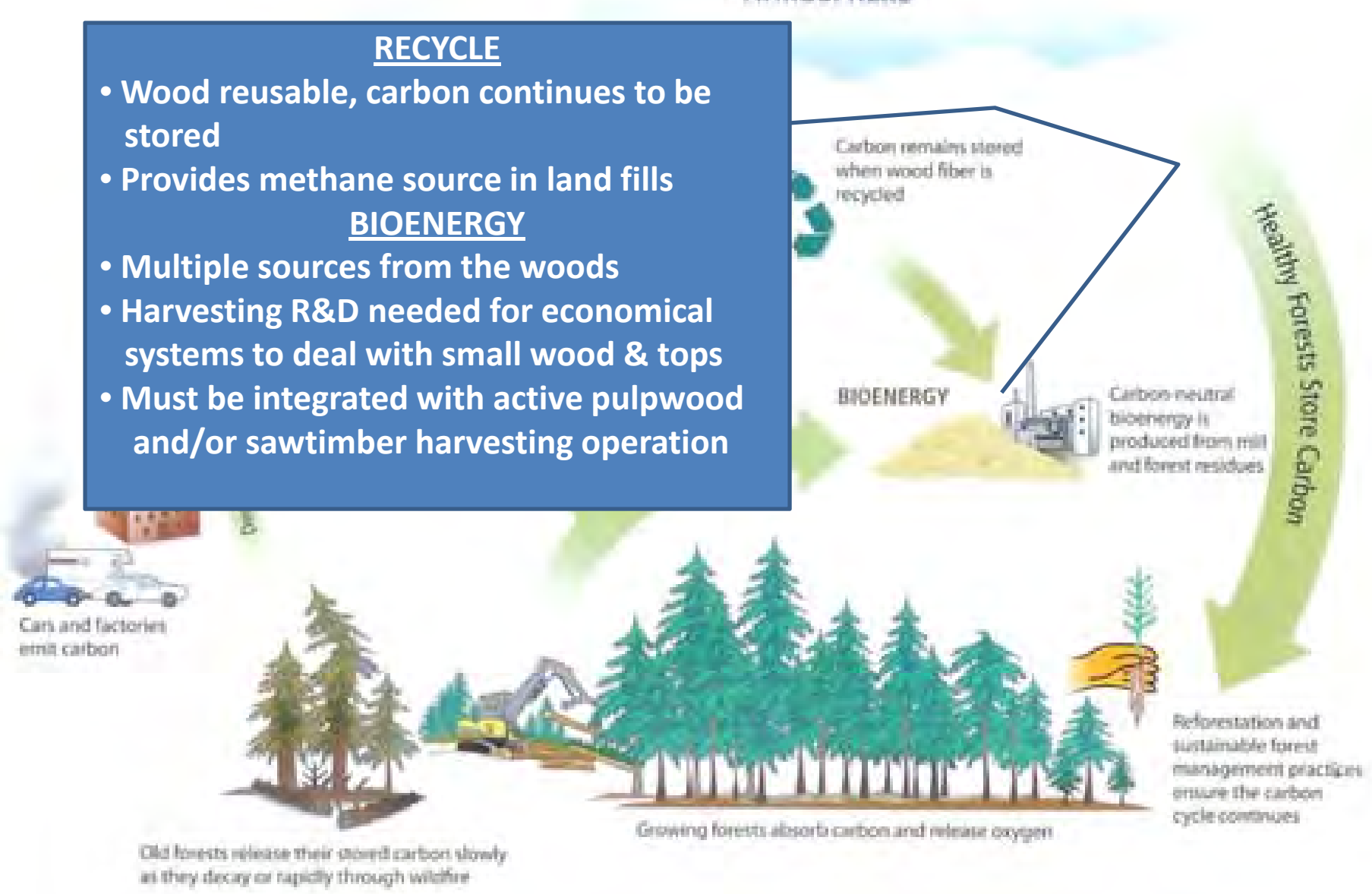
Sustainable Forestry Carbon Cycle



End Use Application

- 65% single family housing in South built on concrete slabs: global warming impact 31% greater per house verses wood
- Wood-frame verses steel and concrete: both 16-17% more energy, carbon footprint +26% steel, +31% concrete
- Wood best insulator: 400x for steel, 15x concrete
- Carbon remains stored in wood

Sustainable Forestry Carbon Cycle

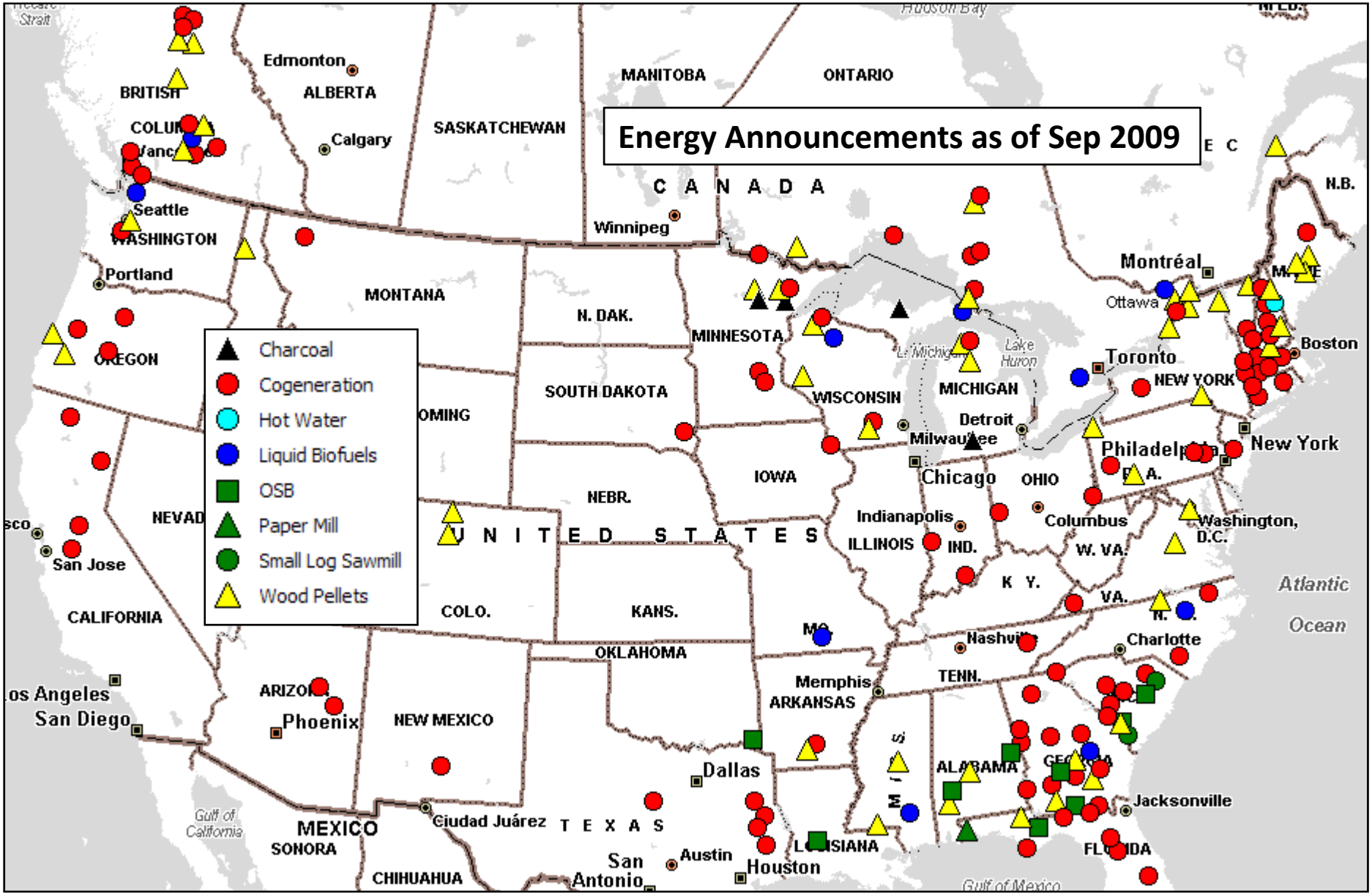


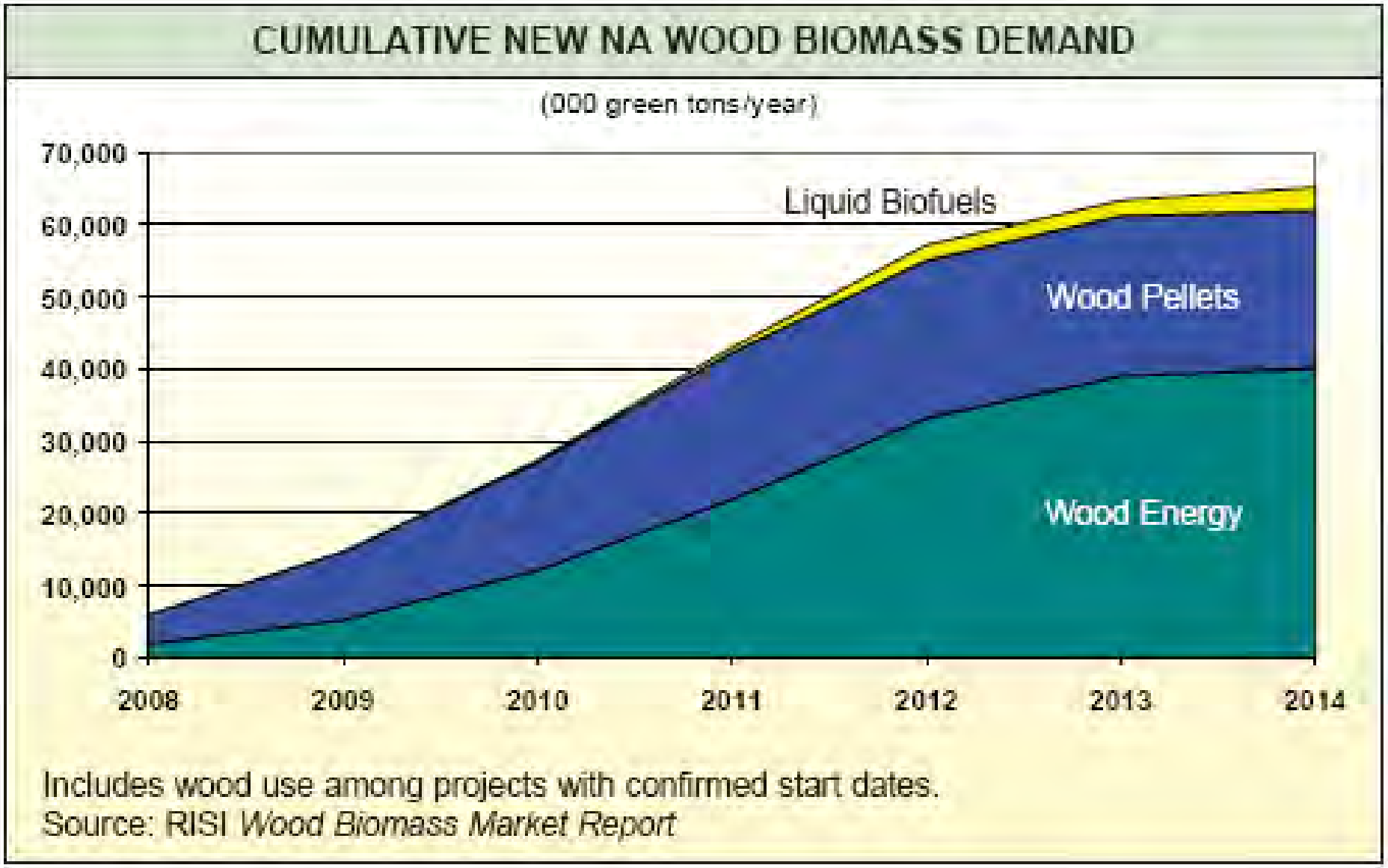
RECYCLE

- **Wood reusable, carbon continues to be stored**
- **Provides methane source in land fills**

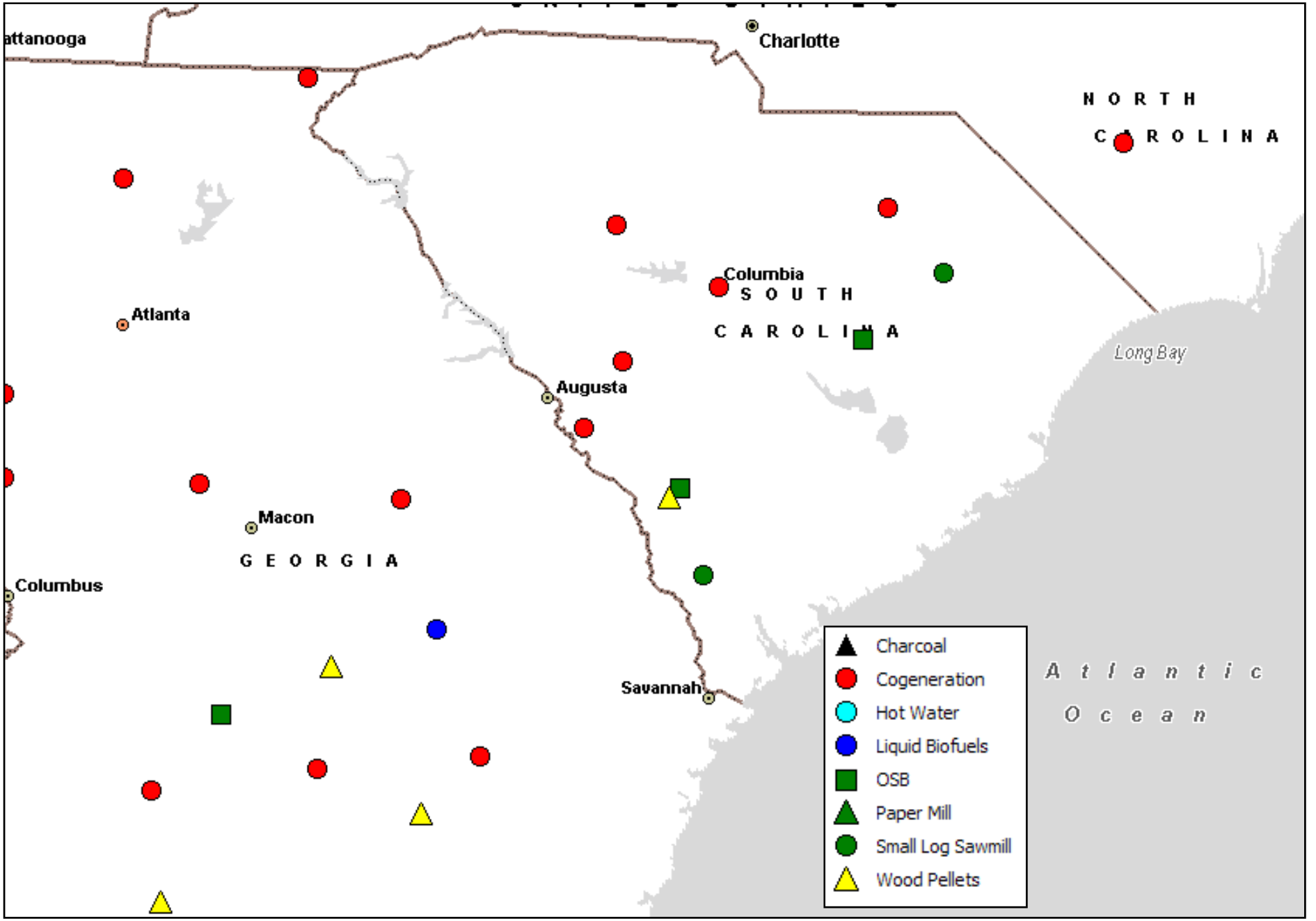
BIOENERGY

- **Multiple sources from the woods**
- **Harvesting R&D needed for economical systems to deal with small wood & tops**
- **Must be integrated with active pulpwood and/or sawtimber harvesting operation**


Energy Announcements as of Sep 2009
Charcoal
Cogeneration
Hot Water
Liquid Biofuels
OSB
Paper Mill
Small Log Sawmill
Wood Pellets
C A N A D A
U N I T E D S T A T E S
MEXICO
Edmonton
Calgary
Winnipeg
Montréal
Ottawa
Toronto
Boston
New York
Seattle
Portland
San Jose
San Diego
Los Angeles
Phoenix
Dallas
Houston
Austin
San Antonio
Ciudad Juárez
Chicago
Detroit
Milwaukee
Indianapolis
Columbus
Memphis
Nashville
Charlotte
Jacksonville
Washington, D.C.
Philadelphia
BRITISH
ALBERTA
SASKATCHEWAN
MANITOBA
ONTARIO
WASHINGTON
OREGON
CALIFORNIA
NEVADA
MONTANA
N. DAK.
MINNESOTA
SOUTH DAKOTA
WISCONSIN
MICHIGAN
IOWA
NEBR.
COLO.
KANS.
OKLAHOMA
TEXAS
NEW MEXICO
ARIZONA
ILLINOIS
IND.
OHIO
W. VA.
KY.
VA.
TENN.
ARKANSAS
MISS.
ALABAMA
LOUISIANA
FLORIDA
N.B.
NEW YORK
Lake Huron
Hudson Bay
Gulf of California
Gulf of Mexico
Atlantic Ocean
SONORA
CHIHUAHUA

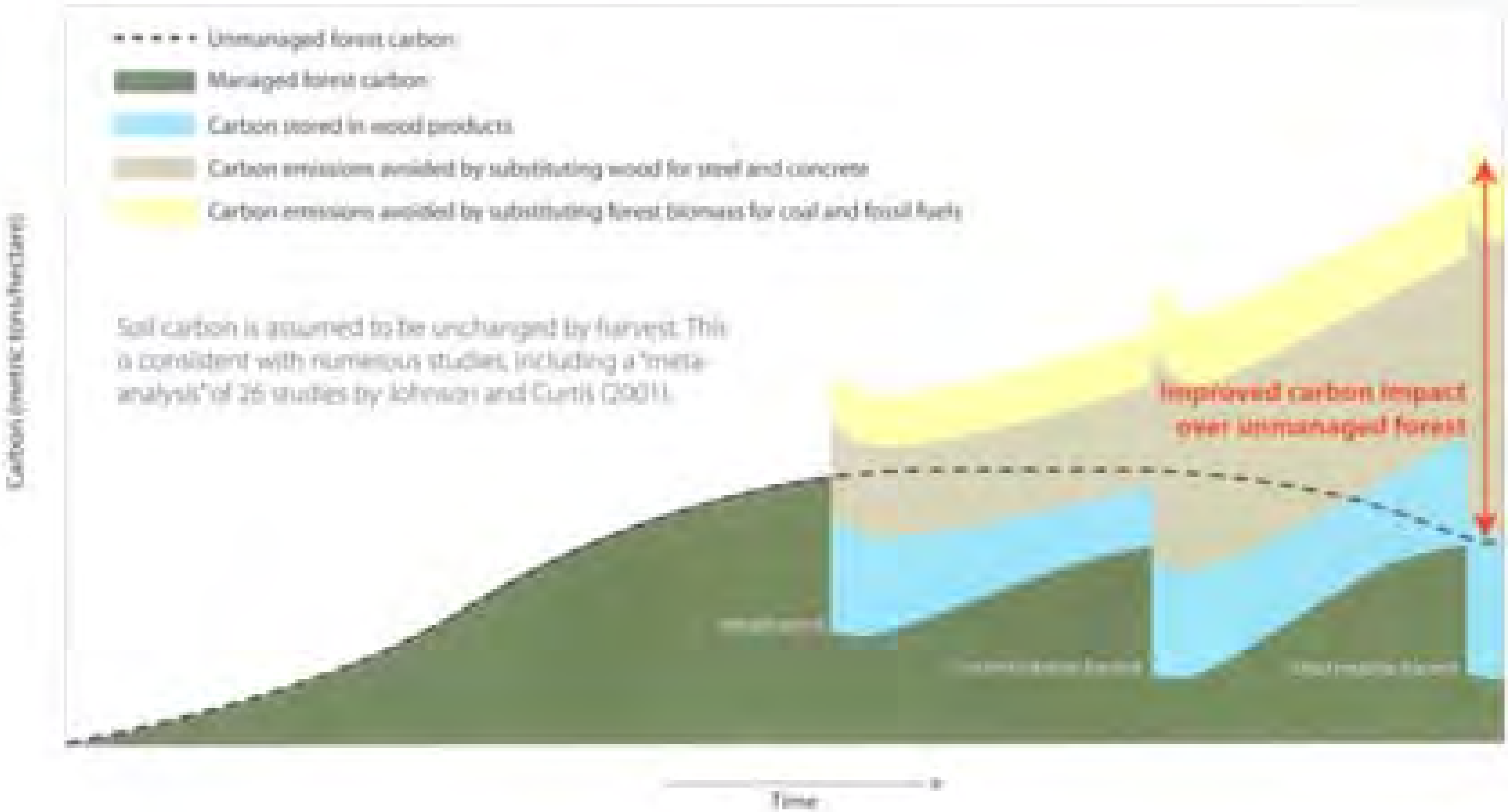


79 million green tons proposed as of March 2010


attanooga
Charlotte
NORTH
CAROLINA
Columbia
SOUTH
CAROLINA
Atlanta
Augusta
Long Bay
Macon
GEORGIA
Columbus
Savannah
Atlantic
Ocean
Charcoal
Cogeneration
Hot Water
Liquid Biofuels
OSB
Paper Mill
Small Log Sawmill
Wood Pellets

The carbon benefit of substitution is significant, cumulative and permanent.

Carbon Benefit of Producing Energy from Forest Biomass



Adapted from: Perez-Garcia, J., B. Lippke, J. Comnick, and C. Manriquez (2005); J. Wilson (2006); E. Oneil and B. Lippke (2009)